Western Water: Expanding Uses/Finite Supplies (Summer Conference, June 2-4) 1986

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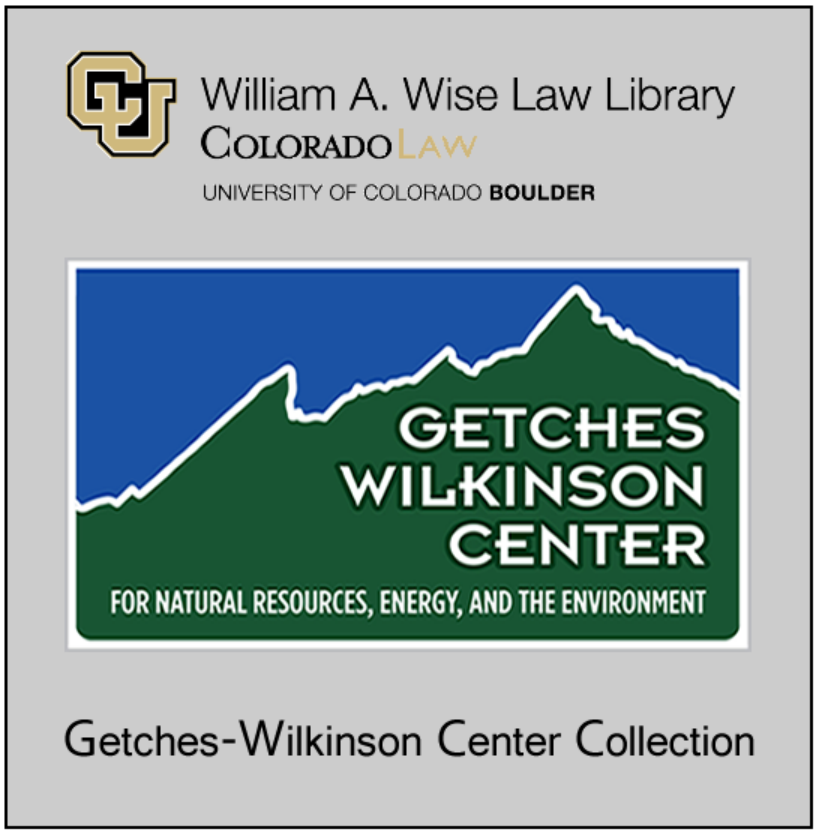
A Case Study: Imperial Valley, California

Dennis B. Underwood



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A Case Study

Imperial Valley, California

Dennis B. Underwood
Colorado River Board of California

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Natural Resources Law Center
University of Colorado School of Law
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I. INTRODUCTION

Intensified demands on developed water supplies are fostering innovative efforts to maximize the beneficial use of water. The Imperial Irrigation District and The Metropolitan Water District of Southern California, both of which rely upon the Colorado River as a principal water source, are in the midst of developing a cooperative water conservation program in Imperial Valley that would mutually benefit both agencies. What makes this program particularly attractive is that it could potentially provide 300,000-400,000 acre-feet of new water for municipal and agriculture purposes at relatively low cost when compared to many alternatives. While the basic concept is relatively simple and technically achieveable, an agreement between two agencies after two years of conferring is still under way. Some background on southern California's major water systems, its Colorado River supply, and the involved agencies is needed before examining the program and the issues affecting an agreement.

II. BRIEF OVERVIEW OF SOUTHERN CALIFORNIA'S MAJOR WATER SUPPLY SYSTEMS

About 80 percent of southern California's municipal and agricultural water supply is provided by four major supply systems. Entities with common rights and contracts to one or more of these sources of supply provide the opportunity for the conveyance systems to interact to increase the State's dependable supply and maximize the beneficial use of water.

A. Los Angeles Aqueduct, 1913

1. Supplies about 0.5 million acre-feet (maf) per year or about 75 percent of the City of Los Angeles water needs.
2. Water conveyed from Owens River-Mono Basin of the eastern High Sierra via the 338 mile aqueduct.
3. Dependable supply about 0.3 maf per year.

B. All-American Canal/Coachella Canal System, 1940 (replaced Alamo Canal, which in part traversed Mexico and which began deliveries to Imperial Valley in 1901)

1. Supplies about 3.4 maf per year (20-year average 1964-1983) to Imperial, Coachella, and Bard Valleys in California.

2. Colorado River water is diverted from Imperial Dam, that last diversion point in the United States, and conveyed by the 82-mile long All-American Canal and the 122-mile Coachella Canal to Imperial and Coachella Valleys.

C. Colorado River Aqueduct, 1941

1. Conveys The Metropolitan Water District of Southern California's entitlement to Colorado River water to coastal southern California.
2. Maximum water contract delivery - 1.212 maf per year.
3. Present dependable supply - 0.5 maf per year.
4. Water is pumped from Lake Havasu (Parker Dam) on the Colorado River into the 242-mile aqueduct.

D. California Aqueduct, 1972 (first deliveries to southern California)

1. Delivers State Water Project water from the Sacramento-San Joaquin Delta to 13 water contractors in southern California via the 444-mile aqueduct.

2. Southern California State Water Project water contractors annual entitlements total 2.5 maf per year with The Metropolitan Water District of Southern California's entitlement being 2.0 maf of the total.
3. Present dependable supply is about 50 percent of contractor's entitlements.

III. CALIFORNIA'S COLORADO RIVER SUPPLY

The amount of Colorado River water available to California is governed by a collection of documents referred to as the "Law of the River". The most significant of these documents relative to water availability to California and the proposed cooperative conservation program are:

A. Colorado River Compact (1922)

1. The Upper and Lower Colorado River Basins were each apportioned 7.5 maf per year.
2. Lower Basin was given the right to increase its use by 1 maf per year.
3. States of the Upper Division obligated to deliver 75 maf at Lee Ferry for any period of 10 consecutive years.

4. Any required delivery to Mexico shall be supplied first from water surplus to the foregoing apportionments (total of 16.0 maf per year) and, if surplus is insufficient, the burden of the deficiency shall be borne equally by the Upper and Lower Basins.

B. Boulder Canyon Project Act (1928, effective June 25, 1929)

1. Approved Colorado River Compact and authorized construction of Hoover Dam and Power Plant and the All-American Canal.
2. Specified priorities of Hoover Dam and Reservoir as
   a. river regulation, navigation and flood control (first priority)
   b. water supply (second priority)
   c. generation of power (third priority)
3. Required California to adopt legislation setting a limit on its use of Colorado River water

C. California Limitation Act (1929)

1. Passed by California Legislature in March 1929.

2. California's consumptive from the Colorado River shall not exceed 4.4 maf per year of the first 7.5 maf apportioned to Lower Basin plus no more than one-half of any surplus.

D. California Seven-Party Agreement (1931)

1. Lists the priority to use Colorado River water by seven signatory parties to the agreement. (See Appendix A)

E. Water Delivery Contracts (1930-1934)

1. California water delivery contracts providing for storage and delivery of water from Lake Mead for a maximum of 5,362,000 acre-feet per year, the amount shown in the Seven-Party Agreement.
2. Seven-Party Agreement was incorporated into all of the water contracts.

F. Agreement of Compromise Between Imperial Irrigation District and Coachella Valley Water District (1934)

1. Imperial Irrigation District shall have prior right for irrigation and potable purposes only, and exclusively for use in the Imperial Service Area.

G. United States-Mexico Water Treaty (1944)

1. Divided the waters of the Colorado River, Rio Grande, and Tijuana River between the United States and Mexico
2. Colorado River delivery obligation to Mexico-1.5 maf per year.

H. U.S. Supreme Court Decree, Arizona v. California (1964)

1. Affirmed the priorities for operation of Hoover Dam set forth in the Boulder Canyon Project Act.
2. Apportioned the first 7.5 maf per year of mainstream water for consumptive use by the three Lower Basin states:
   a. Arizona-2.8 maf per year
   b. California-4.4 maf per year
   c. Nevada-0.3 maf per year
3. If more than 7.5 maf per year is available, then California is apportioned 50 percent of such surplus and Arizona 50 percent with the United States having the right to contract with Nevada for four percent to come out of Arizona's share.
4. Water apportioned to each state shall be released or delivered only pursuant to

valid contracts between each user (including holder of present perfected rights and the Secretary of the Interior.

5. Present perfected rights defined as water rights acquired in accordance with state law and exercised by an actual diversion of water before June 25, 1929.
6. During shortage conditions, the Secretary of the Interior directed to satisfy present perfected rights and then to apportion the amount remaining to the states.
7. Defined consumptive use as river diversions less return flows to the river.
8. If any of the Lower Basin states cannot use water apportioned to it in any year, the Secretary of the Interior may release such unused water for consumptive use in the other two states.
9. Five Indian Reservations located along the mainstream in Arizona, California, and Nevada were allocated present perfected rights for annual quantities not to exceed either (a) diversions of 905,496 acre-feet or (b) the quantity of water necesary to supply consumptive use required for

irrigation of 136,636 acres and related uses, whichever is less.

I. Colorado River Basin Project Act (1968)

1. Authorized the Central Arizona Project and five Upper Basin water projects
2. United States assumed responsibility for meeting the entire Mexican Water Treaty obligation when the river is augmented by 2.5 maf per year.
3. In event of a water shortage, California's basic apportionment of 4.4 maf per year and uses of like character in Arizona and Nevada have priority over the Central Arizona Project.
4. Secretary of the Interior directed to establish coordinated long-range operating criteria for major Colorado River reservoirs based upon priorities listed in the Act.

J. Coordinated Long-Range Operating Criteria for Colorado River Reservoirs (1970)

1. Minimum release objective of 8.25 maf per year at Lee Ferry, the division point between the Upper and Lower Basins.

2. Secretary of the Interior is to declare annually that either "normal", "surplus", or "shortage" condition is to be followed that year and is to develop an annual reservoir operating plan after consultation with the seven Basin states.
3. Secretary of the Interior to determine annually the amount of water to be retained in Upper Basin reservoirs to assure deliveries at Lee Ferry without the impairment of Upper Basin's consumptive uses.
4. When Upper Basin storage is greater than amount determined above, releases above the minimum shall be made in order to maintain, as nearly as practicable, active storage in Lake Mead equal to active storage in Lake Powell.

L. Arizona v. California, Supplemental Decree (1979)

1. Identified Presented Perfected Rights in each of the Lower Basin States and their priority date.

IV. THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California's dependable supply from the Colorado River decreased from about 1 .2 maf per year to about 0.5 maf per year with the commencement of Central Arizona Project deliveries in 1985. Also, its present dependable supply from the State Water Project is only about half of its maximum annual entitlement of 2 maf. Metropolitan's present dependable supply from these two sources is about equal to its present deliveries. It has been actively exploring means to increase the dependable supply from both of these sources in order to meet the future needs of its member agencies.

A. District Description

1. District Service Area-about 5100 square miles of coastal southern California
2. Service area population-over 13 million people, 27 member agencies, more than 135 cities
3. Water wholesaler
4. Fifty-one member Board of Directors

B. Water Supply Contracts and Dependable Supply

1. Colorado River water delivery contract with Secretary of the Interior.
   a. Maximum contract delivery-1.212 maf.
   b. Present dependable supply-less than 0.5 maf.
2. State Water Project water contract
   a. Maximum annual entitlement-2.0 maf.
   b. Present dependable supply-1.0 maf.

C. Water Rates effective July 1, 1986

1. Non-interruptible-$197-$230 per acre-foot.
2. Interruptible-$153-$186 per acre-foot.

D. Possible Future Supplies Being Considered

1. State Water Project Programs
   a. Coordinated Operation Agreement
   b. Completion of the Harvey O. Banks Delta Pumping Plant
   c. Reduction of agricultural entitlements
   d. Los Banos Grandes Reservoir
2. Colorado River Programs-Short Term
   a. Surplus water
   b. Unused Arizona and Nevada water
   c. Unused California agricultural agencies and Indian Reservations water

3. Colorado River Programs-Long Term
   a. Imperial Irrigation District Water Conservation Agreement
   b. Palo Verde Irrigation District Water Utilization Agreement
   c. All-American Canal improvements
   d. Colorado River Banking Program
4. Regional Programs
   a. Ground water storage programs
   b. Local projects
5. Water Management Programs
   a. Interruptible water service
   b. Conservation Program
   c. Surface water storage agreements
   d. Operation of southern California ground water basins

V. IMPERIAL IRRIGATION DISTRICT, IMPERIAL VALLEY, CALIFORNIA

The Imperial Irrigation District has, since the initial operation of the All-American Canal, been creating new (additional) water for beneficial use through system improvements on a timetable consistent with its ability to pay for such improvements. The District has limited opportunities for increased future water use.

A. District Description

1. District gross-area - 1,062,290 acres
2. Net irrigated area - about 500,000 acres
3. Estimated population - about 100,000
4. Average annual rainfall - less then 3 inches
5. Provides water and electric service
6. Five member Board of Directors

B. Water rights and contracts

1. Sole water source - Colorado River
2. Present Perfected Rights - 2.6 maf per year of mainstream diversions or the quantity of mainstream water necessary to supply the consumptive use required for irrigation of 424,145 acres and for the satisfaction of related uses, whichever is less.
3. Water delivery contract with Secretary of the Interior
   a. Water shall be delivered as ordered by the District and as reasonably required for potable and irrigation purposes within the boundaries of the District.

C. Water Delivery and Drainage System

1. All-American Canal - 82 miles long; 15,155 cubic feet per second (cfs) capacity at Imperial Dam. The Canal capacity is reduced 7,600 cfs at Drop No. 1, the point where the Canal delivers water only for Imperial Valley.
2. Distribution system - 1600 miles of laterals and canals (approximately 1/2 of which are concrete lined)
3. Four regulating reservoirs - total capacity of 1,570 acre-feet
4. Drainage system - 1,400 miles of surface drains, over 29,000 miles of underground drain tile
5. Water use - 2.86 maf per year (20-year average 1964-1983)
6. 1986 water rate - $9 per acre-foot

D. Salton Sea

1. Repository for drainage from Imperial, Coachella and Mexicali Valleys
2. Water surface area - approximately 245,000 acres
3. Evaporation rate - about 6 feet per year
4. Current Sea salinity - 40,000 parts per million

VI. IMPERIAL VALLEY COOPERATIVE WATER CONSERVATION PROGRAM CONCEPT--

There is a opportunity in Imperial Valley to create a new supply by conserving a portion of the irrigation return and regulatory water that, under present practices and system operations, would flow to the Salton Sea, a saline water body, and would no longer be part of California's usable water supply. Under the proposed cooperative conservation program concept, The Metropolitan Water District, which has a lower priority to the use of Colorado River water than Imperial and whose dependable Colorado River supply has been reduced by more than 50 percent with the commencement of Central Arizona Project deliveries, would provide necessary monies to accelerate the implementation of improvements to Imperial Irrigation District's water system and operations that would make water, in excess of the present and foreseeable future needs of Imperial Valley, available on a dependable basis to the Metropolitan Water District.

A. Imperial Valley Water Conservation Opportunities

1. Estimates of further conservation opportunities: 300,000-400,000 acre-feet per year

   a. Additional canal and lateral lining

   b. Additional regulating reservoirs

c. Onfarm management improvements

d. System automation

e. Tailwater recovery system

f. Spill reduction program

B. Cooperative Conservation Program Proposal

1. Potential water available to Metropolitan Water District: 100,000-250,000 acre-feet per year
2. Water Conservation Fund
3. Reduction in agricultural agencies maximum diversion rights.
4. Approval by other parties to Seven-Party Agreement and Secretary of the Interior

C. Factual-Technical Problems

D. Water Rights Issues

1. Federal water contract rights
2. Present perfected rights
3. Right to conserved water
4. Sale or transfer of Colorado River right
5. State transfer statutes

E. Institutional-Community Issues

F. Salton Sea Issues

G. California State Water Resources Control Board Decision 1600

VII. CONCLUSION

While the cooperative water conservation program concept has been widely applauded, attempts by the agencies to extend the general concept into an agreement have been hampered by various issues that have arisen relative to the specific and unique requirements and conditions of Imperial Valley and the "Law of the River". This is the case with most of the innovative approaches being pursued in water development and management. They cannot be applied in general terms. To be viable, they must be fashioned to meet the specific conditions of a particular area. All parties remain optimistic that a cooperative conservation program can be fashioned to meet specific and unique conditions in Imperial Valley.

APPENDIX A

LISTING OF PRIORITIES--SEVEN PARTY AGREEMENT

Priority Number	Agency and Description of Service Area	Beneficial Consumptive use, in acre-feet/year
1.	Palo Verde Irrigation District--104,500 acres in and adjoining existing district.	
2.	Yuma Project, California portion, not exceeding 25,000 acres.	
3.	(a) Imperial Irrigation District and other lands that will be served from the All-American Canal in Imperial and Coachella Valleys.	3,850,000
	(b) Palo Verde Irrigation District--16,000 acres of adjoing mesa.	
4.	Metropolitan Water District, City of Los Angeles and/or others on the coastal plain.	550,000
5.	(a) Metropolitan Water District, City of Los Angeles and/or others on the coastal plain	550,000
	(b) City and/or County of San Diego.	112,000
6.	(a) Imperial Irrigation District and other lands that will be served from the All-American Canal in Imperial and Coachella Valleys.	300,000
	(b) Palo Verde Irrigation District--16,000 acres of adjoining mesa.	
TOTAL		5,362,000